

REMARKS

This application has been carefully studied and amended in view of the Office Action dated September 30, 2008. Reconsideration of that action is requested in view of the following.

It is respectfully submitted that Claim 14 and its dependent Claims 15-25 are patentable over Arnold. Claim 14 relates to a process for removing trioxane from a mixture of formaldehyde, trioxane and water by specified steps which includes multiple distillation stages and more particularly includes a third distillation stage as well as an optional fourth distillation stage. In rejecting these claims Examiner Covington recognized that "patentees only use two distillation stages", but then concluded that "the cumulative addition of distillation stages would have been readily envisaged and obvious to one of ordinary skill in the art as the results, a more purified product, would not have been unexpected and therefore unpatentable." Applicants respectfully disagree with this conclusion. The main difference between the inventive process of Claim 1 and the Arnold process is not that the inventive process uses more distillation stages in order to obtain a more purified product. The main difference is that by using a third column (i.e. column 17 in Fig. 1) most of the water present in the formaldehyde, trioxane and water containing feed stream I (i.e. stream 6 in Fig. 1) can be removed as bottom withdrawal stream VI (i.e. 18 in Fig. 1) of the third distillation column. As a consequence, the bottom withdrawal stream II (i.e. 8 in Fig. 1) of the first distillation column (i.e. 7 in Fig. 1) is comparatively rich in formaldehyde. Accordingly, this formaldehyde-rich stream II (8) can be directly recycled to the trioxane synthesis reactor (5 in Fig. 1) without a further concentration. Please note that according to the Arnold process, all of the water contained in the feed stream 1 of Arnold is removed via bottom withdrawal stream 4 of the first column, which is, therefore, relatively rich in water. A water-rich stream corresponding to stream VI (18) of the inventive process does not exist in the Arnold process, because this process only uses two columns instead of three columns.

There was no motivation for one of ordinary skill in the art to modify the Arnold process by adding a third column in order to obtain a bottom withdrawal stream of the first column more concentrated in formaldehyde which can be recycled to the trioxane synthesis. The conclusion

that "cumulative addition of distillation stages would have been readily envisaged and obvious to one of ordinary skill in the art as the results would not have been unexpected" is without basis or suggestion from the prior art and should not be sufficient to support a finding of obviousness.


Parent Claim 14 has been amended to point out the capability of the method permitting stream II of the first distillation stage being rich in formaldehyde so that it can be directly recycled to a trioxane synthesis reactor without further concentration and also to again point out that most of the water present in mixture I can be removed from stream VI. Claim 26 has been added to recite as a further method step the direct recycling of stream II to a trioxane synthesis reactor without further concentration.

Examiner Covington's attention is also directed to dependent Claim 19 which makes clear that the bottom withdrawal stream II of the first column is rich in formaldehyde (from 51 to 80% by weight of formaldehyde), and that the bottom withdrawal stream VI of the third column is rich in water (from 10 to 25% by weight of formaldehyde). These levels of richness in formaldehyde and water are not disclosed in nor suggested by Arnold.

In view of the above remarks and amendments it is respectfully submitted that this application should be passed to issue.

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Respectfully submitted,

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